

=> d his

(FILE 'HOME' ENTERED AT 07:32:49 ON 12 NOV 2003)

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPUS, DISSABS, DDFB, DDFU, DGENE, DRUGB, DRUGLAUNCH, ...' ENTERED AT 07:33:37 ON 12 NOV 2003

SEA NUCLEOTIDE-SUGAR EPIMERASE

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1 FILE AGRICOLA  
2 FILE AQUASCI  
7 FILE BIOSIS  
5 FILE BIOTECHNO  
4 FILE CABA  
1 FILE CANCERLIT  
9 FILE CAPLUS  
1 FILE DISSABS  
5 FILE EMBASE  
6 FILE ESBIOBASE  
1 FILE FSTA  
222 FILE GENBANK  
4 FILE LIFESCI  
6 FILE MEDLINE  
2 FILE PASCAL  
6 FILE SCISEARCH  
4 FILE TOXCENTER  
12 FILE USPATFULL

QUE NUCLEOTIDE-SUGAR EPIMERASE

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FILE 'USPATFULL, CAPLUS, BIOSIS, ESBIOBASE, MEDLINE, SCISEARCH, BIOTECHNO, EMBASE, CABA, LIFESCI, TOXCENTER, AQUASCI, PASCAL, AGRICOLA, CANCERLIT' ENTERED AT 07:35:19 ON 12 NOV 2003

L2 1 S L1 AND (SIALIC ACID OR NANA OR NEURAMINIC ACID)  
L3 0 S N-ACETYLGLUCOSAMINE EPIMERASE-2  
L4 34 S N-ACETYLGLUCOSAMINE EPIMERASE  
L5 22 DUP REM L4 (12 DUPLICATES REMOVED)  
L6 6 S L5 AND (SIALIC ACID OR NANA OR NEURAMINIC ACID)

FILE 'REGISTRY' ENTERED AT 07:42:50 ON 12 NOV 2003  
E UDP-N-ACETYLGLUCOSAMINE-2-EPIMERASE/CN

L7 1 S E4  
E N-ACETYLGLUCOSAMINE-2-EPIMERASE/CN

L6 ANSWER 4 OF 6 BIOTECHNO COPYRIGHT 2003 Elsevier Science B.V. on STN  
ACCESSION NUMBER: 2003:36800542 BIOTECHNO  
TITLE: GlcNAc 2-epimerase can serve a catabolic role in  
          **sialic acid** metabolism  
AUTHOR: Luchansky S.J.; Yarema K.J.; Takahashi S.; Bertozzi  
          C.R.  
CORPORATE SOURCE: C.R. Bertozzi, Department of Chemistry, University of  
                  California, Berkeley, CA 94720, United States.  
                  E-mail: bertozzi@cchem.berkeley.edu  
SOURCE: Journal of Biological Chemistry, (07 MAR 2003), 278/10  
          (8035-8042), 48 reference(s)  
          CODEN: JBCHA3 ISSN: 0021-9258  
DOCUMENT TYPE: Journal; Article  
COUNTRY: United States  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
AB **Sialic acid** is a major determinant of carbohydrate-receptor interactions in many systems pertinent to human health and disease. N-Acetylmannosamine (ManNAc) is the first committed intermediate in the **sialic acid** biosynthetic pathway; thus, the mechanisms that control intracellular ManNAc levels are important regulators of **sialic acid** production. UDP-GlcNAc 2-epimerase and GlcNAc 2-epimerase are two enzymes capable of generating ManNAc from UDP-GlcNAc and GlcNAc, respectively. Whereas the former enzyme has been shown to direct metabolic flux toward **sialic acid** *in vivo*, the function of the latter enzyme is unclear. Here we study the effects of GlcNAc 2-epimerase expression on **sialic acid** production in cells. A key tool we developed for this study is a cell-permeable, small molecule inhibitor of GlcNAc 2-epimerase designed based on mechanistic principles. Our results indicate that, unlike UDP-GlcNAc 2-epimerase, which promotes biosynthesis of **sialic acid**, GlcNAc 2-epimerase can serve a catabolic role, diverting metabolic flux away from the **sialic acid** pathway.

=> d 12 ibib ab

L2 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2003 ACS on STN  
ACCESSION NUMBER: 2001:634533 CAPLUS  
DOCUMENT NUMBER: 136:242629  
TITLE: The complete sequence of the 1,683-Kb pSymB megaplasmid from the N2-fixing endosymbiont *Sinorhizobium meliloti*  
AUTHOR(S): Finan, Turlough M.; Weidner, Stefan; Wong, Kim;  
Buhrmester, Jens; Chain, Patrick; Vorholter, Frank J.;  
Hernandez-Lucas, Ismael; Becker, Anke; Cowie, Alison;  
Gouzy, Jerome; Golding, Brian; Puhler, Alfred  
CORPORATE SOURCE: Department of Biology, McMaster University, Hamilton,  
ON, L8S 4K1, Can.  
SOURCE: Proceedings of the National Academy of Sciences of the United States of America (2001), 98(17), 9889-9894  
CODEN: PNASA6; ISSN: 0027-8424  
PUBLISHER: National Academy of Sciences  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Anal. of the 1683,333-nt sequence of the pSymB megaplasmid from the symbiotic N2-fixing bacterium *Sinorhizobium meliloti* revealed that the replicon has a high gene density with a total of 1570 protein-coding regions, with few insertion elements and regions duplicated elsewhere in the genome. The only copies of an essential arg-tRNA gene and the minCDE genes are located on pSymB. Almost 20% of the pSymB sequence carries genes encoding solute uptake systems, most of which were of the ATP-binding cassette family. Many previously unsuspected genes involved in polysaccharide biosynthesis were identified and these, together with the two known distinct exopolysaccharide synthesis gene clusters, show that 14% of the pSymB sequence is dedicated to polysaccharide synthesis. Other recognizable gene clusters include many involved in catabolic activities such as protocatechuate utilization and phosphonate degradation. The functions of these genes are consistent with the notion that pSymB plays a major role in the saprophytic competence of the bacteria in the soil environment.  
REFERENCE COUNT: 76 THERE ARE 76 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s N-acetylglucosamine epimerase-2  
13 FILES SEARCHED...  
L3 0 N-ACETYLGLUCOSAMINE EPIMERASE-2

=> s N-acetylglucosamine epimerase  
L4 34 N-ACETYLGLUCOSAMINE EPIMERASE

=> dup rem 14  
PROCESSING COMPLETED FOR L4  
L5 22 DUP REM L4 (12 DUPLICATES REMOVED)

=> s 15 and (sialic acid or NANA or neuraminic acid)  
6 FILES SEARCHED...  
11 FILES SEARCHED...  
L6 6 L5 AND (SIALIC ACID OR NANA OR NEURAMINIC ACID)

=> d 16 ibib ab 1-6

L6 ANSWER 1 OF 6 USPATFULL on STN  
ACCESSION NUMBER: 2003:60089 USPATFULL  
TITLE: Nucleotide sequence of the *Haemophilus influenzae* Rd genome, fragments thereof, and uses thereof  
INVENTOR(S): Fleischmann, Robert D., Gaithersburg, MD, United States

PATENT ASSIGNEE(S) :  
Adams, Mark D., N. Potomac, MD, United States  
White, Owen, Gaithersburg, MD, United States  
Smith, Hamilton O., Towson, MD, United States  
Venter, J. Craig, Potomac, MD, United States  
Human Genome Sciences, Inc., Rockville, MD, United States  
(U.S. corporation)  
Johns Hopkins University, Baltimore, MD, United States  
(U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6528289	B1	20030304
APPLICATION INFO.:	US 2000-643990		20000823 (9)
RELATED APPLN. INFO.:			Continuation of Ser. No. US 1995-487429, filed on 7 Jun 1995 Continuation-in-part of Ser. No. US 1995-426787, filed on 21 Apr 1995, now abandoned

DOCUMENT TYPE: Utility  
FILE SEGMENT: GRANTED  
PRIMARY EXAMINER: Martinell, James  
LEGAL REPRESENTATIVE: Human Genome Sciences, Inc.  
NUMBER OF CLAIMS: 23  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 47 Drawing Figure(s); 47 Drawing Page(s)  
LINE COUNT: 4428

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides the sequencing of the entire genome of *Haemophilus influenzae* Rd, SEQ ID NO:1. The present invention further provides the sequence information stored on computer readable media, and computer-based systems and methods which facilitate its use. In addition to the entire genomic sequence, the present invention identifies over 1700 protein encoding fragments of the genome and identifies, by position relative to a unique Not I restriction endonuclease site, any regulatory elements which modulate the expression of the protein encoding fragments of the *Haemophilus* genome.

L6 ANSWER 2 OF 6 USPATFULL on STN  
ACCESSION NUMBER: 94:66407 USPATFULL  
TITLE: Process for the production of activated sialic acids  
INVENTOR(S): Kittelmann, Matthias, Kartäuserstrasse 88, 7800 Freiburg, Germany, Federal Republic of  
Ghisalba, Oreste, Eschenweg 3, 4153 Reinach, Switzerland  
Klein, Teresa, Mariengartenstrasse 6, 5170 Jülich, Germany, Federal Republic of  
Kragl, Udo, 665 Takarazuka-Shi, Takatsukasa-3-6-32 Nigawa, Greenheight 105, Japan  
Wandrey, Christian, Wolfshovener Strasse 139, 5170 Jülich, Germany, Federal Republic of

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5334514		19940802
APPLICATION INFO.:	US 1993-152269		19931112 (8)
RELATED APPLN. INFO.:			Continuation of Ser. No. US 1992-915474, filed on 16 Jul 1992, now abandoned

	NUMBER	DATE
PRIORITY INFORMATION:	CH 1991-2119	19910717
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	Granted	
PRIMARY EXAMINER:	Lilling, Herbert J.	
LEGAL REPRESENTATIVE:	Kaiser, Karen G., Fishman, Irving M.	

NUMBER OF CLAIMS: 15  
EXEMPLARY CLAIM: 1  
LINE COUNT: 1301

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to a process for the production of cytidine 5'-monophosphosialic acids which comprises reacting a **sialic acid** with cytidine 5'-triphosphate in the presence of a cell extract of a naturally occurring microorganism having cytidine 5'-monophospho-N-acetylneurameric acid synthetase activity, the extract optionally having been subjected to one purification step.

L6 ANSWER 3 OF 6 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
ACCESSION NUMBER: 2001:49966 BIOSIS  
DOCUMENT NUMBER: PREV200100049966  
TITLE: The structure of UDP-N-acetylglucosamine 2-epimerase reveals homology to phosphoglycosyl transferases.  
AUTHOR(S): Campbell, Robert E.; Mosimann, Steven C.; Tanner, Martin E. [Reprint author]; Strynadka, Natalie C. J.  
CORPORATE SOURCE: Department of Chemistry, University of British Columbia, Vancouver, British Columbia, V6T 1Z1, Canada mtanner@chem.ubc.ca; natalie@byron.biochem.ubc.ca  
SOURCE: Biochemistry, (December 12, 2000) Vol. 39, No. 49, pp. 14993-15001. print.  
CODEN: BICHAW. ISSN: 0006-2960.  
DOCUMENT TYPE: Article  
LANGUAGE: English  
ENTRY DATE: Entered STN: 24 Jan 2001  
Last Updated on STN: 12 Feb 2002

AB Bacterial UDP-N-acetylglucosamine 2-epimerase catalyze the reversible epimerization at C-2 of UDP-N-acetylglucosamine (UDP-GlcNAc) and thereby provides bacteria with UDP-N-acetylmannosamine (UDP-ManNAc), the activated donor of ManNAc residues. ManNAc is critical for several processes in bacteria, including formation of the antiphagocytic capsular polysaccharide of pathogens such as *Streptococcus pneumoniae* types 19F and 19A. We have determined the X-ray structure (2.5 ANG) of UDP-GlcNAc 2-epimerase with bound UDP and identified a previously unsuspected structural homology with the enzymes glycogen phosphorylase and T4 phage beta-glucosyltransferase. The relationship to these phosphoglycosyl transferases is very intriguing in terms of possible similarities in the catalytic mechanisms. Specifically, this observation is consistent with the proposal that the UDP-GlcNAc 2-epimerase-catalyzed elimination and re-addition of UDP to the glycal intermediate may proceed through a transition state with significant oxocarbenium ion-like character. The homodimeric epimerase is composed of two similar alpha/beta/alpha sandwich domains with the active site located in the deep cleft at the domain interface. Comparison of the multiple copies in the asymmetric unit has revealed that the epimerase can undergo a 10degree interdomain rotation that is implicated in the regulatory mechanism. A structure-based sequence alignment has identified several basic residues in the active site that may be involved in the proton transfer at C-2 or stabilization of the proposed oxocarbenium ion-like transition state. This insight into the structure of the bacterial epimerase is applicable to the homologous N-terminal domain of the bifunctional mammalian UDP-GlcNAc "hydrolyzing" 2-epimerase/ManNAc kinase that catalyzes the rate-determining step in the **sialic acid** biosynthetic pathway.

L6 ANSWER 4 OF 6 BIOTECHNO COPYRIGHT 2003 Elsevier Science B.V. on STN  
ACCESSION NUMBER: 2003:36800542 BIOTECHNO  
TITLE: GlcNAc 2-epimerase can serve a catabolic role in **sialic acid** metabolism  
AUTHOR: Luchansky S.J.; Yarema K.J.; Takahashi S.; Bertozzi C.R.  
CORPORATE SOURCE: C.R. Bertozzi, Department of Chemistry, University of California, Berkeley, CA 94720, United States.

SOURCE: E-mail: bertozzi@ccchem.berkeley.edu  
Journal of Biological Chemistry, (07 MAR 2003), 278/10  
(8035-8042), 48 reference(s)  
CODEN: JBCHA3 ISSN: 0021-9258

DOCUMENT TYPE: Journal; Article

COUNTRY: United States

LANGUAGE: English

SUMMARY LANGUAGE: English

AB **Sialic acid** is a major determinant of carbohydrate-receptor interactions in many systems pertinent to human health and disease. N-Acetylmannosamine (ManNAc) is the first committed intermediate in the **sialic acid** biosynthetic pathway; thus, the mechanisms that control intracellular ManNAc levels are important regulators of **sialic acid** production. UDP-GlcNAc 2-epimerase and GlcNAc 2-epimerase are two enzymes capable of generating ManNAc from UDP-GlcNAc and GlcNAc, respectively. Whereas the former enzyme has been shown to direct metabolic flux toward **sialic acid** *in vivo*, the function of the latter enzyme is unclear. Here we study the effects of GlcNAc 2-epimerase expression on **sialic acid** production in cells. A key tool we developed for this study is a cell-permeable, small molecule inhibitor of GlcNAc 2-epimerase designed based on mechanistic principles. Our results indicate that, unlike UDP-GlcNAc 2-epimerase, which promotes biosynthesis of **sialic acid**, GlcNAc 2-epimerase can serve a catabolic role, diverting metabolic flux away from the **sialic acid** pathway.

L6 ANSWER 5 OF 6 BIOTECHNO COPYRIGHT 2003 Elsevier Science B.V. on STN  
ACCESSION NUMBER: 1985:15127922 BIOTECHNO

TITLE: The metabolism of **sialic acids** in isolated rat colonic mucosal cells

AUTHOR: Corfield A.P.; Clamp J.R.; Wagner S.A.

CORPORATE SOURCE: University of Bristol Department of Medicine Laboratories, Bristol Royal Infirmary, Bristol BS2 8HW, United Kingdom.

SOURCE: Biochemical Journal, (1985), 226/1 (163-174)

CODEN: BIJOAK

DOCUMENT TYPE: Journal; Article

COUNTRY: United Kingdom

LANGUAGE: English

AB The activities of ten enzymes involved in **sialic acid** metabolism were measured in colonic mucosal cells from rats and compared with those in liver. A methodology was devised that enabled all ten enzyme activities to be evaluated in a single rat colon preparation. Enzyme assays with radioactively labelled substrates were developed for maximum sensitivity, and the identification of substrates and products was carefully checked to assess the contribution of contaminants to enzyme reactions with low activity. The activities of most enzymes involved in the biosynthesis of N-acetyl-D-**neuraminic acid** (NeuAc) from UDP-N-acetyl-D-glucosamine were found to be more than 20-fold lower than those in liver. The activities of CMP-NeuAc synthase, N-acetyl-D-glucosamine 2-epimerase, N-acetyl-D-glucosamine kinase, sialyltransferase and sialidase were similar to or 2-4-fold lower than in liver. The biosynthesis of NeuAc via its 9-phosphate was demonstrated in the 100,000 g supernatant of colonic-cell homogenates by enzymic assay and precursor experiments with N-acetylcents..sup.1.sup.4C!-mannosamine. No alternative route for NeuAc formation could be detected. The 100,000 g supernatant fractions of liver, kidney and colonic mucosal cells utilized N-acetylcents..sup.1.sup.4C!mannosamine with differing efficiencies. Radioactive products identified as **sialic acid** biosynthetic intermediates amounted to 49%, 0.04% and 5.6% of added precursor in liver, kidney and colon respectively. Catabolism of labelled precursor to non-hexosamine products was high in kidney and colonic

mucosal-cell fractions.

L6 ANSWER 6 OF 6 PASCAL COPYRIGHT 2003 INIST-CNRS. ALL RIGHTS RESERVED. on  
STN

ACCESSION NUMBER: 1993-0286066 PASCAL  
TITLE (IN ENGLISH): Clinical and biochemical studies in an American child  
with sialuria

AUTHOR: KRASNEWICH D. M.; TIETZE F.; KRAUSE W.; PRETZLAFF R.;  
WENGER D. A.; DIWADKAR V.; GAHL W. A.

CORPORATE SOURCE: NIH, national inst. child health human development,  
human genetics branch, Bethesda MD 20892, United  
States

SOURCE: Biochemical medicine and metabolic biology, (1993),  
49(1), 90-96, 18 refs.  
ISSN: 0885-4505 CODEN: BMMBES

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-14095, 354000038486530100

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FULL ESTIMATED COST	59.04	60.90
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DICTIONARY FILE UPDATES: 11 NOV 2003 HIGHEST RN 615535-77-8

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP  
PROPERTIES for more information. See STNote 27, Searching Properties  
in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> e UDP-N-acetylglucosamine-2-epimerase/CN

E1	1	UDP-N-ACETYLGLUCOSAMINE-1-CARBOXYVINYLTRANSFERASE (MYCOBACTE RIUM LEPRAE STRAIN TN GENE MURA)/CN
E2	1	UDP-N-ACETYLGLUCOSAMINE-1-PHOSPHATE TRANSFERASE (PROCHLOROCO CCUS MARINUS PASTORIS STRAIN MED4 GENE PMM1227)/CN
E3	0 -->	UDP-N-ACETYLGLUCOSAMINE-2-EPIMERASE/CN
E4	1	UDP-N-ACETYLGLUCOSAMINE-2-EPIMERASE / N-ACETYLMANNOSAMINE KI NASE (HUMAN GENE UDP-GLCNAC-2-EPIMERASE)/CN
E5	1	UDP-N-ACETYLGLUCOSAMINE-2-EPIMERASE NEUC (LEPTOSPIRA INTERRO GANS ICTEROHAEMORRHAGIAE STRAIN 56601 GENE NNAC)/CN

E6 1 UDP-N-ACETYLGLUCOSAMINE-4-EPIMERASE/CN  
E7 1 UDP-N-ACETYLGLUCOSAMINE-6-PHOSPHOGALACTOSE SULFATE/CN  
E8 1 UDP-N-ACETYLGLUCOSAMINE-DOLICHOL PHOSPHATE N-ACETYLGLUCOSAMI  
NYLTRANSFERASE/CN  
E9 1 UDP-N-ACETYLGLUCOSAMINE-DOLICHYL PHOSPHATE N-ACETYLGLUCOSAMI  
NE PHOSPHOTRANSFERASE (SULFOLOBUS ACIDOCALDARIUS ORF2)/CN  
E10 1 UDP-N-ACETYLGLUCOSAMINE-DOLICHYL PHOSPHATE N-ACETYLGLUCOSAMI  
NE PHOSPHOTRANSFERASE (SULFOLOBUS TOKODAI STRAIN 7 GENE ST2  
057)/CN  
E11 1 UDP-N-ACETYLGLUCOSAMINE-DOLICHYL PYROPHOSPHATE N-ACETYLGLUO  
SAMINE N-ACETYLGLUCOSAMINYLTRANSFERASE/CN  
E12 1 UDP-N-ACETYLGLUCOSAMINE-GLYCOPROTEIN N-ACETYLGLUCOSAMINYLTRA  
NSFERASE/CN

=> S E4;D

L7 1 "UDP-N-ACETYLGLUCOSAMINE-2-EPIMERASE / N-ACETYLMANNOSAMINE KINAS  
E (HUMAN GENE UDP-GlcNAc-2-EPIMERASE) "/CN

L7 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS on STN

RN 462370-10-1 REGISTRY

CN GenBank CAB42607 (9CI) (CA INDEX NAME)

OTHER NAMES:

CN 2909: PN: WO03038130 FIGURE: 3 claimed protein

CN GenBank CAB42607 (Translated from: GenBank AJ238764)

CN UDP-N-acetylglucosamine-2-epimerase / N-acetylmannosamine kinase  
(human gene UDP-GlcNAc-2-epimerase)

FS PROTEIN SEQUENCE

MF Unspecified

CI MAN

SR GenBank

LC STN Files: CA, CAPLUS

\*\*RELATED SEQUENCES AVAILABLE WITH SEQLINK\*\*